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Michelle Gregoire
UNH Office for Research Partnerships and Commercialization

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Student Wins Award Of Excellence For Biodiesel Research

Contact: Michelle Gregoire
603-862-0126
UNH Office for Research Partnerships and Commercialization

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Note to editors: The company name is MBP, Bioenergy, LLC (with commas).

DURHAM, N.H. —Say you're a freshman at the University of New Hampshire. One day you eat lunch in the dining hall and have some fries with your burger. A week later, you hop on Wildcat Transit to catch a ride to your dorm. The fuel for that shuttle bus might have been made from the same canola oil that bubbled in the deep-fry cooker the week before.

The Biodiesel Group in the UNH Chemical Engineering Department, led by Prof. Ihab Farag, has drawn up plans for an automated processor to turn waste vegetable oil into biodiesel fuel that could be used in university vehicles and other diesel-powered engines, or anywhere that heating fuel is used on campus. Hardware and process control designs are completed and testing has begun. Next year, students will add automation equipment to the manual processor at the Woodman Farm on campus and produce biodiesel.

UNH will save money because it will not have to pay a waste collector to haul away the spent cooking oil, and it will have to buy less biodiesel for its vehicles. However, the greater benefit may well belong to the university's industry partner in this project, MBP, Bioenergy, LLC of Conway.

MBP's original patent-pending design, the Weevo processor, is a small manually operated unit with a range of commercial applications, depending on the amount of waste vegetable oil produced annually, the availability of labor and a use for the finished product, biodiesel. Company president Jim Proulx knew it would capture a much larger market if it could be automated. He turned to Farag and UNH for the engineering and computer expertise to take his product to the next level. In less than a year of tinkering and trial-and-error, they found that automation was indeed feasible.

The company's Weevo processor is the only "micro machine" on the market at a price that yields a reasonable return on investment and is capable of converting waste vegetable oils or equivalent feedstock oils into biofuel that meets the industry standard for quality, says Proulx. Automation will reduce labor, increase production and allow for remote monitoring, all of which are significant advantages for small-scale producers.

With proof-of-concept in hand, and a projection of the potential market, they called the New Hampshire Industrial Research Center for some help. A grant of $40,000 covered the research expenses at the university, and it was matched by contributions from MBP. One year later, the project is nearly complete and Proulx is impressed with the efforts of the students and the results.

“Our work with Dr. Farag’s team at UNH will help us to expand our product base, increase our market opportunities, and empower our firm to meet the increasingly challenging demands of biodiesel producers worldwide,” says Proulx. MBP projections call for placing 20 processors in each state within the first year of commercial production, with a processing goal of 5 to 30 million gallons.

Two UNH chemical engineering students who worked on the MBP project are residents of Barrington and graduates of Dover High School. Joseph Pearson has worked on the project for two years and, as a senior in the fall, will see it to fruition at the Woodman Farm. Kristopher Cui, who graduated with honors in May, has been hired by OSRAM Sylvania. Cui won an Award of Excellence for his presentation at the Vice President for Research Symposium at the Undergraduate Research Conference. He was one of 20 students to receive the honor.

“Research opportunities for undergraduates at UNH can open doors for graduate education or employment,” says Dr. John Aber, Vice President for Research. “We are fortunate to have such dedicated faculty to guide our student research projects.”

The goal of the New Hampshire Industrial Research Center is to create industry-university research partnerships that result in jobs and economic development. The NHIRC issues a request for proposals twice a year for its Granite State Technology Innovation Grant. For more information, go to www.nhirc.unh.edu.

Photo is available to download: http://www.unh.edu/news/img/KCbio.JPG

Caption: Kristopher Cui, left, winner of a Student Award of Excellence, stands at his poster with his adviser, Dr. Ihab Farag, at the UNH Undergraduate Research Conference.

(no credit)